NOνA Overview

NOνA Collaboration Meeting

Fermilab

26 August 2005

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Developments Since Our Last Meeting (May)

- EPP2010 Meeting at Fermilab
- NuSAG Presentation and Questions
- PAC Meeting at Aspen
- Established a Project Office
  - Project Manager: John Cooper
  - Deputy Project Manager: Ron Ray
- Appointed Project Engineers and Level 2 Managers
- Preliminary Director's Review

Upcoming Events

- **NuSAG Report**
- **P5**
- **Conceptual Design Report**

Advisory Committees: NuSAG

- The NuSAG charge is to choose one or more experiments in three classes: accelerator, reactor, and double beta decay.
- In our case, the three entries are not comparable:
  - NOνA — a large US experiment (the only approved US accelerator experiment for the next decade)
  - US participation in T2K (2 proposals) — an order of magnitude less US funds
  - FLARE — an R&D project
- NuSAG questions raised some issues that we could not answer as well as we should be able to.
- NuSAG will finish its report next month (but does not have anyone to issue it to).

Advisory Committees: P5

- P5's charge: "begin the task of making a new roadmap for the next decade…. The roadmap should integrate the various projects into a coherent plan based on scientific promise, cost, and technical and budgetary constraints."
- The "immediate question" is whether to terminate the Tevatron Collider or BaBar sooner than planned to make room for new initiatives in neutrinos and dark matter and energy under the assumption of a constant budget.
- P5 will meet at Fermilab September 12 and 13, but only to discuss the Tevatron program.

Advisory Committees: PAC

- The June PAC report requested similar information as was asked by P5, specifically on beam backgrounds.
- In a "confidential" report, the PAC requested a study of a second off-axis detector to measure the second oscillation maximum.
  - What are the rates and backgrounds?
  - What would be the best detector technology?
  - What would be the best location?
- I feel that this study should be a Fermilab study, rather than just a NOνA study.

Simulation Needs

- **Simulations are not part of the project, but are needed for the project. We need to set requirements and show that we have considered alternatives and optimized choices.**
- **Event reconstruction**
  - **Needed for cell size optimization and light requirements**
  - **Potential trap here: We don't want to optimize the experiment using a non-optimum reconstruction. (If we are only counting events, we don't need any segmentation at all.)**
  - **Possible solution: Use lower level parameters that the FoM. Examples: Gaps before photon conversions, electron vs. photon or muon shape parameters.**

Simulation Needs

- FoM difference for the alternative site
- Near Detector overlap
  - Timing requirement for Near Detector electronics
- Cosmic photon background
  - Overburden requirement
- Beam background systematics
  - Near Detector movability requirement
  - External experiment (MIPP, MINERνA, MINOS ND) requirements
- Second detector potential
- Beam optimization (low priority)